GROUND WATER FORUM TELECONFERENCE
Thursday, October 3, 2002

FALL 2002 MEETING
If you plan to attend the Fall 2002 TSP meeting in Pensacola, please reserve your room on the U.S.EPA TSP room block at the Clarion Suites Resorts and Conference Center by October 28th in order to get the government rate (1-800-874-5303).

VAPOR INTRUSION GUIDANCE
Helen Dawson indicated that the draft Vapor Intrusion Guidance has been reviewed by EPA's Senior Cleanup Council. There will be no more opportunity to provide technical comments on the draft. Debbie Newberry (HQ) will incorporate attorneys' comments by the end of the week. The guidance will then will go to ORD for final approval, and to Assistant Administrator Horinko for signature. Afterwards, a notice in the Federal Register will announce that the draft guidance is available for review and comment. The guidance will not be finalized for about two years, so the draft will be used in the interim. Helen noted that completion of the draft guidance was held up because some toxicologists believed the method for calculating the indoor air target level did not follow RAGS requirements. They have since agreed on a method, but the tables are not final yet. When the tables are finalized, Helen will forward a copy of the guidance to EMS to distribute to the forum. Helen also plans to present at a 2-day, ORD-sponsored training on the guidance as well as a ½-day training on her own. She will forward copies of her presentation slides to EMS to distribute to the forum as an aid to understanding the guidance.

1,4-DIOXANE
Tom Mohr of the Santa Clara Valley Water District summarized the research he has done with regards to 1,4-dioxane in ground water and drinking water supplies in California. The Ground Water Forum has read Tom's white paper on the subject is trying to develop a national perspective on the 1,4-dioxane.

As the Solvents and Toxics Liaison for the Water District, Tom began investigating the problem of DNAPL and whether all contaminants of concern associated with the DNAPL are being addressed. Through researching solvent patents, Tom learned that solvents are typically a mixture of compounds. Some additives change the chemical properties of the solvent, and others (e.g., DDT in PCE to fumigate clothes for moths) add value to the solvent. The change in chemical properties resulting from the additives consequently affect the behavior of DNAPL in the subsurface.

Tom found that 1,1,1-TCA contains one of the highest percentages of added stabilizers—up to 8% 1,4-dioxane. TCE and PCE, by comparison, contain smaller amounts of stabilizers. 1,4-dioxane is the most mobile of subsurface organic compounds. It is very hydrophilic, and has a low K_{ow} and Henry's constant. Thus, it is not removed through ground-water flow or standard treatment processes for solvents, like air stripping. Some varieties of carbon may be somewhat effective at removing 1,4-dioxane, but this needs further evaluation. Treatment processes that do work include ultraviolet oxidation due to the short atmospheric half-life of 1,4-dioxane. Advanced oxidation (e.g.., a combination of peroxide and ozone) is also effective at treating 1,4-dioxane.

Tom noted that 1,4-dioxane is not a significant ecological hazard; however, he is concerned that treated ground-water containing 1,4-dioxane is reinjected and may turn up in drinking water. A wide range of opinions on the toxicity of 1,4-dioxane exists. The advisory drinking water level in California for 1,4-dioxane is 3 ppb, and some toxicologists recommend a level of 1 ppb. In Michigan, however, the advisory level is 85 ppb. This uncertainty makes it difficult to determine how to deal with the presence of 1,4-dioxane. Tom pointed out that for 20 years, the Orange County Water District pumped reclaimed wastewater into an aquifer to act as a sea water intrusion barrier. The reclaimed water contained 1,4-dioxane from the manufacture of cellular acetate membranes used for reverse osmosis. The 1,4-dioxane when untreated by the aerobic biological treatment, and up to 20 ppb were detected in supply wells. The California Department of Health Services convinced city water utility operators that

shutdown of the wells was not necessary since the aquifer would be flushed out in 20 years. Thus, ground-water would not pose a health threat since advisory levels are based on a 70-year exposure period.

1,4-dioxane can be found at a variety of sites including those that housed solvent recycling, solid rocket motor manufacturing, and PET plastics manufacturing. Measured concentrations in ground water have been as high as 870 ppb at a solvent recycling site, although Tom believes much higher concentrations have been reported at a site in South Carolina. California Regional Water Quality Control Board, San Francisco Bay Region, is finding 1,4-dioxane at nearly every site he looks for it, but at concentrations that are lower than expected and that would not necessarily pose a health risk. Tom mentioned that Lawrence Livermore National Laboratory tested for low levels of VOCs (down to 0.15 ppb), but did not find 1,4-dioxane in 65 municipal supply wells in the Santa Clara Valley. However, they did detect it in some wells in Sacramento County at sub-ppb levels.

At the conclusion of Tom's presentation, the Ground Water Forum decided that analyzing for 1,4-dioxane was an important issue to raise in their Regions. Tom Mohr and Brian Lewis offered to prepare a 1-2-page summary of the white paper that forum members could submit to their Division Directors as a national recommendation to analyze for 1,4-dioxane. Currently, there is a wide range of approaches to 1,4-dioxane in the regions, and many do not look for it at all. Tom recommended that the best place to begin looking for it is at solvent sites located near public water supplies or private wells.

Tom mentioned the possibility of working with the forum to develop a survey to distribute to the regions that analyze for 1,4-dioxane. The results of the survey would be used to determine which sites should be prioritized for 1,4-dioxane testing.

CO-CHAIR NOMINATIONS

It's time to nominate a new Ground Water Forum co-chair to replace outgoing co-chair, Vince Malott. Please submit your nominations to Vince or co-chair Bernie Zavala before the next conference call on November 7.

ATTENDEES

Regions:
Dick Willey, Region 1
Rob Alvey, Region 2
Kevin Willis, Region 2
Kathy Davies, Region 3
Dave Jenkins, Region 4
Bill O'Steen, Region 4
Kay Wischkaemper, Region 4
Luanne Vanderpool, Region 5
Doug Yeskis, Region 5
Vince Malott, Region 6
Jeff Johnson, Region 7
Randy Breeden, Region 8
Helen Dawson, Region 8
Kendra Morrison, Region 8
Glenn Bruck, Region 9
Bernie Zavala, Region 10

States:
Judy Canova, SC DHEC
Helge Gabert, UT DEQ
Mark Henry, MI DEQ
Mavis Kent, OR DEQ
Brian Lewis, CA DTSC
Tom Mohr, Santa Clara Valley Water District, CA
Barb Vetort, MI DEQ

Laboratories:
Dave Burden, NRMRL/SPRD ORD

Headquarters:
Matt Charsky,
Ken Lovelace, OERR

Contractors:
Diane Dopkin, EMS